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20. SEXUAL DIMORPHISM IN THE CYPRINID FISH *PUNTIUS CONCHONIUS* (HAMILTON-BUCHANAN)¹

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Puntius conchoni (Ham.-Buch.) is one of the most beautiful and favourite ornamental fish among the Puntid species. It has been reported from most parts of India (Day 1878; Talwar and Jhingran 1991), including Garhwal Himalaya (Singh *et al.* 1987). The body is deep and compressed. Its head length is 4.4 to 5.1, body depth is 2.9 to 3.3, predorsal length is 2.3 to 2.5 and prepelvic length is 2.4 to 2.7 in ratio of total length. Scales are medium about 22-26 in the lateral line, however, the lateral line ceases after about 5 to 9 scales. There is a dark black blotch on 15-19 scales just above the anal fin on both the sides. During the present biological investigations on the fish collected from Mandal – a rain-fed stream, from Garhwal Himalaya (29° 26' -31° 28' N and 77° 49' -80° 6' E), some striking sexual dimorphic differences were observed.

Sexual dimorphism in fish has already been reported in different species by Swarup and Swarup (1975), Tilak (1975),

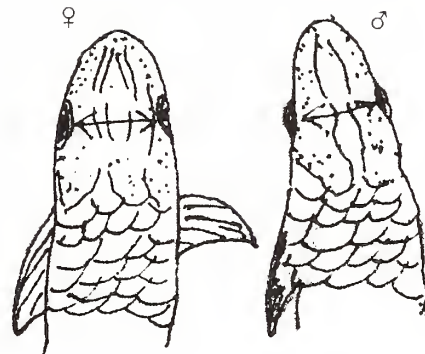


Fig. 2: Dorsal surface of head/snout of female and male *P. conchoni*

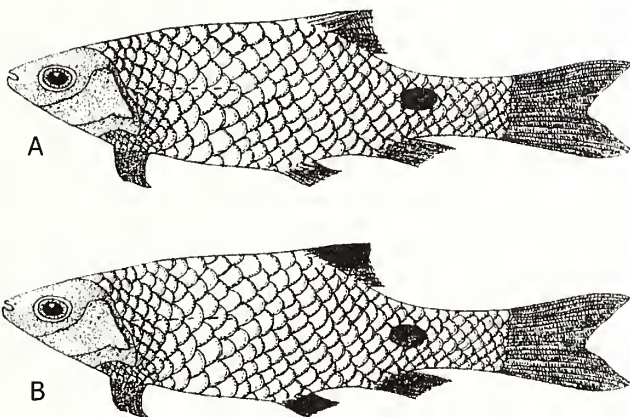


Fig. 1: Sexual dimorphism in *P. conchoni*
 A. Female, B. Male

Table 1: Some important taxonomic characters in both sexes of *Puntius conchoni* (Ham.-Buch.)

Character in ratio	Male	Female
HL in ratio of TL	4.53-5.36 (4.997+0.26)	4.35-5.2 (4.97+0.25)
CL in ratio of TL	4.41-5.38 (4.87+0.3)	4.3-5.28 (4.70+0.26)
MBD in ratio of TL	2.92-3.36 (3.096+0.12)	2.89-3.39 (3.10+0.13)
PDL in ratio of TL	2.19-2.43 (2.326+0.07)	2.25-2.53 (2.35+0.09)
PPL in ratio of TL	2.34-2.61 (2.47+0.09)	2.38-2.69 (2.48+0.08)
ED in ratio of HL	2.6-3.75 (3.06+0.32)	2.8-3.75 (3.171+0.25)

TL = Total length, HL = head length, CL = caudal length, MBD = maximum body depth, PDL = predorsal length, PPL = prepelvic length, ED = Eye diameter

Pathni (1978), Ritakumari and Nair (1979) and Badola *et al.* (1982). Our observations on sexual dimorphism in *Puntius conchoni* (Ham.-Buch.) is based on the study of fifty male and female specimens each, collected between November 2003 and January 2004. The fishes were segregated on the mentioned sexual dimorphic characters, and dissected for confirmation. We got hundred percent confirmation and then decided to report it for an addition to the scientific knowledge based on the study of morphometric characters.

The detailed morphometric and meristic characters of both male as well as female fish were studied (Table 1), but no striking difference was seen. The differences are (i) male with dark black shade on the dorsal, ventral and anal fins, absent in female (Fig. 1), (ii) Upper portion of the body shining olive green and lower portion silvery in both sexes; but there is pinkish colour in males between these two portions, which is not visible in the female specimens, and (iii) the snout is broader on upper side in the female compared to the male (Fig. 2).

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21. SEXUAL DIMORPHISM IN FLATHEAD GREY MULLET *MUGIL CEPHALUS* (LINNAEUS)¹

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Introduction

Sexual dimorphism is widespread in nature and can be influenced by sex specific natural selection resulting from ecological differences between the sexes (Reimchen and Nosil 2004). Differences in the selective pressures experienced by the sexes can ultimately result in the evolution of sexual dimorphism of morphological traits (Andersson 1994). Many fish species show sexual dimorphism, a condition where males and females are different in colour and/or form, thus sexes can be detected externally.

Comparison of morphological features in males and females of similar length group facilitate to work out the sexual dimorphism. Species that show difference in coloration between sexes are said to display sexual dichromism (Martin Moe 2002).

The study on sexual dimorphism is of great significance in taxonomy, bionomics, reproductive biology, monosex

culture of fishes, hybridization experiments, hormonal sex control, identification of maturity stage, identification of hybrids, breeding season, induced breeding, seedling production technology and also in the observation of courtship and mating, mate selection, and preference.

The study on sexual dimorphism has been carried out in a very few species of fishes like *Tetraodon travancoricus* (Inasu 1993), *Puntius filamentosus* (Thobias 1974), *Priacanthus hamrur* (Tessy and Inasu 1998), and *Ompok bimaculatus* and *Horabagrus brachysoma* (Kurian and Inasu 1997).

The present work deals with the sexual dimorphism of the Flathead Grey Mullet *M. cephalus* belonging to Order Mugiliformes and Family Mugilidae. It is commonly called 'Kanambu', 'Alameen' or 'Thirutha' in Malayalam, 'Madavai' in Tamil, and 'Kathiparega' in Telugu (Talwar and Jhingran 1991). Grey Mulletts are mostly marine, distributed in temperate and tropical seas, estuaries and some rivers, but spawn in the